

SEQUENCE LISTING

<110> Heekstra, Merl F.
Xie, Weilin
Murray, Brion
Mercurio, Frank

<120> METHODS FOR MODULATING SIGNAL
TRANSDUCTION MEDIATED BY TGF-BETA AND RELATED PROTEINS

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<140> US

<141> 1999-08-29

<160> 32

<170> FastSEQ for Windows Version 3.0

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<211> 108

<212> PRT

<213> Homo sapien

<220>

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<222> (1)...(1)

<223> Xaa = Tyrosine or Phenylalanine

<221> VARIANT

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<223> Xaa = any amino acid; 0-1 residues may be missing

<221> VARIANT

<222> (6)...(16)

<223> Xaa = any amino acid; 0-3 residues may be missing

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<223> Xaa = any amino acid

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<223> Xaa = Valine, Isoleucine or Leucine

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<223> Xaa = any amino acid

<221> VARIANT

09385918-083099

<222> (30)...(30)
<223> Xaa = Lysine or Arginine

<221> VARIANT
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<223> Xaa = any amino acid

<221> VARIANT
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<223> Xaa = Leucine or Valine

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<223> Xaa = Valine or Leucine

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<223> Xaa = Threonine or Serine

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<223> Xaa = any amino acid

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<223> Xaa = Leucine, Valine, Methionine, Alanine or Isoleucine

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<223> Xaa = any amino acid

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<223> Xaa = any amino acid

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<223> Xaa = any amino acid; 0-6 residues may be missing

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<223> Xaa = any amino acid; 0-2 residues may be missing

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<223> Xaa = any amino acid

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<223> Xaa = any amino acid

09385918.083099

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1				5					10					15	
Trp	Phe	Trp	Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Xaa	Xaa	Xaa	Xaa
			20					25					30		
Xaa	Xaa	Gln	Phe	Xaa	Thr	Gly	Xaa	Xaa	Arg	Leu	Pro	Xaa	Xaa	Gly	Phe
		35				40						45			
Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ile	Xaa	Xaa
		50				55					60				
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Pro	Xaa	Xaa	His	Thr	Cys	Phe	Asn
65					70					75					80
Xaa	Leu	Asp	Leu	Pro	Xaa	Tyr	Xaa	Ser	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
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Leu	Xaa	Xaa	Ala	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe				
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<223> Xaa = any amino acid
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 <223> Xaa = any amino acid

<221> VARIANT
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 (e.g., S,H,P,D,E,T or Y)

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 (e.g., S,H,P,D,E,T or Y)

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 <223> Xaa = any amino acid

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 <223> Xaa = independently selected polar amino acid
 (e.g., S,H,P,D,E,T or Y)

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 (e.g., S,H,P,D,E,T or Y)

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 <223> Xaa = any amino acid

<221> VARIANT
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 <223> Xaa = independently selected polar amino acid
 (e.g., S,H,P,D,E,T or Y)

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 <223> Xaa = independently selected polar amino acid
 (e.g., S,H,P,D,E,T or Y)

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Gly	Pro	Leu	Pro	Xaa	Gly	Trp	Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Gly	Xaa
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Xaa	Tyr	Tyr	Xaa	Xaa	His	Asn	Thr	Xaa	Thr	Thr	Xaa	Trp	Xaa	Xaa
			20				25						30	Pro

09385918-083099

Xaa

<210> 3
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 <213> Homo sapien

<400> 3
 Ser Pro Leu Pro Pro Gly Trp Glu Glu Arg Gln Asp Ile Leu Gly Arg
 1 5 10 15
 Thr Tyr Tyr Val Asn His Glu Ser Arg Arg Thr Gln Trp Lys Arg Pro
 20 25 30
 Thr Pro Gln Asp Asn Leu
 35

<210> 4
 <211> 38
 <212> PRT
 <213> Homo sapien

<400> 4
 Ser Gly Leu Pro Pro Gly Trp Glu Glu Arg Gln Asp Ile Leu Gly Arg
 1 5 10 15
 Thr Tyr Tyr Val Asn His Glu Ser Arg Arg Thr Gln Trp Lys Arg Pro
 20 25 30
 Thr Pro Gln Asp Asn Leu
 35

<210> 5
 <211> 38
 <212> PRT
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 Gly Phe Leu Pro Lys Gly Trp Glu Val Arg His Ala Pro Asn Gly Arg
 1 5 10 15
 Pro Phe Phe Ile Asp His Asn Thr Lys Thr Thr Thr Trp Glu Asp Pro
 20 25 30
 Arg Leu Lys Ile Pro Ala
 35

<210> 6
 <211> 38
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 Gly Pro Leu Pro Pro Gly Trp Glu Glu Arg Thr His Thr Asp Gly Arg
 1 5 10 15
 Ile Phe Tyr Ile Asn His Asn Ile Lys Arg Thr Gln Trp Glu Asp Pro
 20 25 30
 Arg Leu Glu Asn Val Ala
 35

00385918 082099

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<210> 11
<211> 38
<212> PRT
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<213> Homo sapien

<400> 11

Gln	Pro	Leu	Pro	Pro	Gly	Trp	Glu	Arg	Arg	Val	Asp	Asp	Arg	Arg	Arg
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Val	Tyr	Tyr	Val	Asp	His	Asn	Thr	Arg	Thr	Thr	Thr	Trp	Gln	Arg	Pro
			20					25					30		
Thr	Met	Glu	Ser	Val	Arg										
			35												

<210> 12

<211> 38

<212> PRT

<213> Homo sapien

<400> 12

Gly	Pro	Leu	Pro	Pro	Gly	Trp	Glu	Lys	Arg	Val	Asp	Ser	Thr	Asp	Arg
1				5				10						15	
Val	Tyr	Phe	Val	Asn	His	Asn	Thr	Lys	Thr	Thr	Gln	Trp	Glu	Asp	Pro
			20					25					30		
Arg	Thr	Gln	Gly	Leu	Gln										
			35												

<210> 13

<211> 38

<212> PRT

<213> Homo sapien

<400> 13

Glu	Pro	Leu	Pro	Glu	Gly	Trp	Glu	Ile	Arg	Tyr	Thr	Arg	Glu	Gly	Val
1				5				10						15	
Arg	Tyr	Phe	Val	Asp	His	Asn	Thr	Arg	Thr	Thr	Thr	Phe	Lys	Asp	Pro
			20					25					30		
Arg	Asn	Gly	Lys	Ser	Ser										
			35												

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<223> Xaa = any amino acid

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Pro	Pro	Xaa	Tyr
1			

<210> 15

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09335918-083099

<220>
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 <223> Xaa = Serine or Threonine

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 <223> Xaa = Proline, Alanine or Glycine

<400> 15
 Xaa Pro Pro Pro Xaa Tyr
 1 5

<210> 16
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<400> 16
 Thr Pro Pro Pro Ala Tyr
 1 5

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 1 5 10

<210> 18
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<400> 18
 Thr Pro Pro Pro Gly Tyr
 1 5

<210> 19
 <211> 11
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<220>
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 <223> Xaa = Isoleucine or Leucine

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<400> 19
 Thr Pro Pro Pro Gly Tyr Xaa Ser Glu Asp Gly
 1 5 10

<210> 20
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<400> 20
 Glu Leu Glu Ser Pro Pro Pro Pro Tyr Ser Arg Tyr Pro Met
 1 5 10

<210> 21
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 Gly Pro Glu Ser Pro Pro Pro Pro Tyr Ser Arg Leu Ser Pro
 1 5 10

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 Pro Ala Asp Thr Pro Pro Pro Ala Tyr Leu Pro Pro Glu Asp
 1 5 10

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<400> 23
 Pro Ala Asp Thr Pro Pro Pro Ala Tyr Met Pro Pro Asp Asp
 1 5 10

<210> 24
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<400> 24
 Ile Pro Glu Thr Pro Pro Pro Gly Tyr Ile Ser Glu Asp Gly
 1 5 10

<210> 25
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<400> 25

09385918 030309

Ala Gly Leu Thr Pro Pro Pro Gly Tyr Leu Ser Glu Asp Gly
1 5 10

<210> 26
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<400> 26

Leu Pro Ser Gly Trp Glu Gln Arg Lys Asp Pro His Gly Arg Thr Tyr
1 5 10 15
Tyr Val Asp His Asn Thr Arg Thr Thr Thr Trp Glu Arg Pro Gln Pro
20 25 30
Leu Pro Pro Gly Trp Glu
35

<210> 27
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<400> 27

Pro Ala Asp Thr Pro Pro Pro Ala His Leu Pro Pro Glu Asp
1 5 10

<210> 28
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His Pro Gly Thr Pro Pro Pro Pro Tyr Thr Val Gly Pro Gly
1 5 10

<210> 29
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Ile Pro Gly Thr Pro Pro Pro Asn Tyr Asp Ser Leu Arg Leu
1 5 10

<210> 30
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<400> 30

Ile Pro Gly Thr Pro Pro Pro Asn His Asp Ser Leu Arg Leu
1 5 10

<210> 31
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<213> Homo sapien

<400> 31

Gly	Phe	Arg	Trp	Lys	Leu	Ala	His	Phe	Arg	Tyr	Leu	Cys	Gln	Ser	Asn
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Ala	Leu	Pro	Ser	His	Val	Lys	Ile	Asn	Val	Ser	Arg	Gln	Thr	Leu	Phe
			20					25					30		
Glu	Asp	Ser	Phe	Gln	Gln	Ile	Met	Ala	Leu	Lys	Pro	Tyr	Asp	Leu	Arg
		35					40					45			
Arg	Arg	Leu	Tyr	Val	Ile	Phe	Arg	Gly	Glu	Glu	Gly	Leu	Asp	Tyr	Gly
	50					55					60				
Gly	Leu	Ala	Arg	Glu	Trp	Phe	Phe	Leu	Leu	Ser	His	Glu	Val	Leu	Asn
65					70					75					80
Pro	Met	Tyr	Cys	Leu	Phe	Glu	Tyr	Ala	Gly	Lys	Asn	Asn	Tyr	Cys	Leu
			85						90					95	
Gln	Ile	Asn	Pro	Ala	Ser	Thr	Ile	Asn	Pro	Asp	His	Leu	Ser	Tyr	Phe
			100					105					110		
Cys	Phe	Ile	Gly	Arg	Phe	Ile	Ala	Met	Ala	Leu	Phe	His	Gly	Lys	Phe
	115						120					125			
Ile	Asp	Thr	Gly	Phe	Ser	Leu	Pro	Phe	Tyr	Lys	Arg	Met	Leu	Ser	Lys
	130					135					140				
Lys	Leu	Thr	Ile	Lys	Asp	Leu	Glu	Ser	Ile	Asp	Thr	Glu	Phe	Tyr	Asn
145					150					155					160
Ser	Leu	Ile	Trp	Ile	Arg	Asp	Asn	Asn	Ile	Glu	Glu	Cys	Gly	Leu	Glu
			165						170					175	
Met	Tyr	Phe	Ser	Val	Asp	Met	Glu	Ile	Leu	Gly	Lys	Val	Thr	Ser	His
			180					185					190		
Asp	Leu	Lys	Leu	Gly	Gly	Ser	Asn	Ile	Leu	Val	Thr	Glu	Glu	Asn	Lys
	195						200					205			
Asp	Glu	Tyr	Ile	Gly	Leu	Met	Thr	Glu	Trp	Arg	Phe	Ser	Arg	Gly	Val
	210					215					220				
Gln	Glu	Gln	Thr	Lys	Ala	Phe	Leu	Asp	Gly	Phe	Asn	Glu	Val	Val	Pro
225					230					235					240
Leu	Gln	Trp	Leu	Gln	Tyr	Phe	Asp	Glu	Lys	Glu	Leu	Glu	Val	Met	Leu
			245						250					255	
Cys	Gly	Met	Gln	Glu	Val	Asp	Leu	Ala	Asp	Trp	Gln	Arg	Asn	Thr	Val
			260					265					270		
Tyr	Arg	His	Tyr	Thr	Arg	Asn	Ser	Lys	Gln	Ile	Ile	Trp	Phe	Trp	Gln
			275				280					285			
Phe	Val	Lys	Glu	Thr	Asp	Asn	Glu	Val	Arg	Met	Arg	Leu	Leu	Gln	Phe
	290					295					300				
Val	Thr	Gly	Thr	Cys	Arg	Leu	Pro	Leu	Gly	Gly	Phe	Ala	Glu	Leu	Met
305					310					315					320
Gly	Ser	Asn	Gly	Pro	Arg	Asn	Ser	Gln	Lys	Phe	Cys	Ile	Glu	Lys	Val
			325						330					335	
Gly	Lys	Asp	Thr	Trp	Leu	Pro	Arg	Ser	His	Thr	Cys	Phe	Asn	Arg	Leu
			340					345					350		
Asp	Leu	Pro	Pro	Tyr	Lys	Ser	Tyr	Glu	Gln	Leu	Lys	Glu	Lys	Leu	Leu
	355						360					365			
Phe	Ala	Ile	Glu	Glu	Thr	Glu									
	370					375									

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<213> Homo sapien

<400> 32

Gly	Phe	Arg	Trp	Lys	Leu	Ala	His	Phe	Arg	Tyr	Leu	Cys	Gln	Ser	Asn	
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Ala	Leu	Pro	Ser	His	Val	Lys	Ile	Asn	Val	Ser	Arg	Gln	Thr	Leu	Phe	
			20					25				30				
Glu	Asp	Ser	Phe	Gln	Gln	Ile	Met	Ala	Leu	Lys	Pro	Tyr	Asp	Leu	Arg	
		35					40					45				
Arg	Arg	Leu	Tyr	Val	Ile	Phe	Arg	Gly	Glu	Glu	Gly	Leu	Asp	Tyr	Gly	
	50					55					60					
Gly	Leu	Ala	Arg	Glu	Trp	Phe	Phe	Leu	Leu	Ser	His	Glu	Val	Leu	Asn	
65				70						75					80	
Pro	Met	Tyr	Cys	Leu	Phe	Glu	Tyr	Ala	Gly	Lys	Asn	Asn	Tyr	Cys	Leu	
			85						90					95		
Gln	Ile	Asn	Pro	Ala	Ser	Thr	Ile	Asn	Pro	Asp	His	Leu	Ser	Tyr	Phe	
			100					105					110			
Cys	Phe	Ile	Gly	Arg	Phe	Ile	Ala	Met	Ala	Leu	Phe	His	Gly	Lys	Phe	
	115						120					125				
Ile	Asp	Thr	Gly	Phe	Ser	Leu	Pro	Phe	Tyr	Lys	Arg	Met	Leu	Ser	Lys	
	130					135					140					
Lys	Leu	Thr	Ile	Lys	Asp	Leu	Glu	Ser	Ile	Asp	Thr	Glu	Phe	Tyr	Asn	
145				150						155					160	
Ser	Leu	Ile	Trp	Ile	Arg	Asp	Asn	Asn	Ile	Glu	Glu	Cys	Gly	Leu	Glu	
			165						170					175		
Met	Tyr	Phe	Ser	Val	Asp	Met	Glu	Ile	Leu	Gly	Lys	Val	Thr	Ser	His	
			180					185					190			
Asp	Leu	Lys	Leu	Gly	Gly	Ser	Asn	Ile	Leu	Val	Thr	Glu	Glu	Asn	Lys	
	195						200					205				
Asp	Glu	Tyr	Ile	Gly	Leu	Met	Thr	Glu	Trp	Arg	Phe	Ser	Arg	Gly	Val	
	210					215					220					
Gln	Glu	Gln	Thr	Lys	Ala	Phe	Leu	Asp	Gly	Phe	Asn	Glu	Val	Val	Pro	
225					230					235					240	
Leu	Gln	Trp	Leu	Gln	Tyr	Phe	Asp	Glu	Lys	Glu	Leu	Glu	Val	Met	Leu	
			245						250					255		
Cys	Gly	Met	Gln	Glu	Val	Asp	Leu	Ala	Asp	Trp	Gln	Arg	Asn	Thr	Val	
			260					265					270			
Tyr	Arg	His	Tyr	Thr	Arg	Asn	Ser	Lys	Gln	Ile	Ile	Trp	Phe	Trp	Gln	
		275					280					285				
Phe	Val	Lys	Glu	Thr	Asp	Asn	Glu	Val	Arg	Met	Arg	Leu	Leu	Gln	Phe	
	290					295					300					
Val	Thr	Gly	Thr	Cys	Arg	Leu	Pro	Leu	Gly	Gly	Phe	Ala	Glu	Leu	Met	
305					310					315					320	
Gly	Ser	Asn	Gly	Pro	Arg	Asn	Ser	Gln	Lys	Phe	Cys	Ile	Glu	Lys	Val	
			325						330					335		
Gly	Lys	Asp	Thr	Trp	Leu	Pro	Arg	Ser	His	Thr	Cys	Phe	Asn	Arg	Leu	
			340					345					350			
Asp	Leu	Pro	Pro	Tyr	Lys	Ser	Tyr	Glu	Gln	Leu	Lys	Glu	Lys	Leu	Leu	
	355					360						365				
Phe	Ala	Ile	Glu	Glu	Thr	Glu	Gly	Phe	Gly	Gln	Glu					
	370					375					380					

09385918-083099